UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/467,544	12/10/1999	KATHRIN BERKNER	74451.P103	2523

7590	07/12/2005		EXAMINER

MICHAEL J MALLIE
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
12400 WISHIRE BOULEVARD 7TH FLR
LOS ANGELES, CA 90025

PERUNGAVOOR, SATHYANARAYA V

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/467,544	BERKNER, KATHRIN
	Examiner	Art Unit	
	Sath V. Perungavoor	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _22 June 2005_.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-87_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) _6, 7, 38, 39, 56, 57, 71, 72, 78, 79, 84 and 85_ is/are allowed.

6) ☒ Claim(s) _1-5, 8-37, 40-55, 58-70, 73-77, 80-83, 86 and 87_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Applicant(s) Response to Official Action

[1]   The response filed on 22 June 2005 has been entered and made of record.

Response to Arguments/Amendments

[2]   Applicant's arguments filed on 22 June 2005 have been fully considered, but are moot in

view of the new ground(s) of rejection.

Objection to the Claims

Summary of Arguments:

> Applicant amends the claims to overcome the objection. Applicant requests the
>
> withdrawal of the objection.

Examiner's Response:

> Agreed. Examiner withdraws the previously made objection.

Claim Rejections - 35 USC § 112

Summary of Arguments:

> Applicant amends the claims to overcome the rejection. Applicant requests the
>
> withdrawal of the rejection.

Examiner's Response:

Agreed. Examiner withdraws the previously made rejection.

Claim Rejections - 35 USC § 103

Summary of Arguments:

Regarding Claims 8-9, 40-41, 58-59, 73-74 and 80-81: Applicant argues the following:

1. "While Boccignone discloses wavelet transforms and their resulting coefficients, Shimizu

   discloses performing image correction in the pixel domain. Applicant respectfully

   submits that one skilled in the art would not look to art such as Shimizu regarding

   performing image correction in the pixel domain when applying techniques in the

   wavelet domain."

Regarding Claims 11-15: Applicant argues the following:

1. Examiner uses hindsight in combining Boccignone with Vetterli.

Applicant requests the withdrawal of the rejections.

Examiner's Response:

Examiner respectfully disagrees.

Regarding Claims 8-9, 40-41, 58-59, 73-74 and 80-81: Examiner contends that wavelet

transforms present multiresolution images in the pixel domain *[Boccignone Page 2789 Column 1*

Abstract and Paragraphs 1 and 2.].

Regarding Claims 11-15: In response to applicant's argument that the examiner's

conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized

that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight

reasoning. But so long as it takes into account only knowledge which was within the level of

ordinary skill at the time the claimed invention was made, and does not include knowledge

gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re*

McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
sale in this country, more than one year prior to the date of application for patent in the United States.

[3]   Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Vuylsteke [US

5,644,662].

Regarding claim 1, Vuylsteke discloses all the claim limitations, as follows:

A method comprising (Fig. 4): receiving input data (Fig. 4); and

performing multi-scale unsharp masking on the input data using different

scale dependent parameters for different scales selected based on the

source of the input data (Fig. 4; b_0-b_{L-1} and g_L are the multi-scale unsharp

values. Scale dependent parameters are met by g_1-g_{L-1}.).

[4]   Claims 2-5, 10, 13, 16-20, 27-37, 47-55, 60, 66-70, 75-77 are rejected under 35

U.S.C. 102(b) as being anticipated by Boccignone et al. ("Boccignone") [NPL document, refer to

PTO-892].

Regarding claim 2, Boccignone discloses all the claim limitations, as follows:

A method for processing input data comprising: decomposing the

input data into a plurality of decomposition levels by applying a wavelet

transform to the input data (Page 2789 Equation 4; Equation 4 discloses

the wavelet transform decomposition.) and modifying coefficients in at

least two of the plurality of decomposition levels, to sharpen or smooth the

coefficients, by scaling coefficients in the at least two decomposition

levels using different scale dependent parameters for each of the

decomposition levels (Page 2790 Column 1 Lines 1-3; $\psi(x,y)$ is scale

dependent as it can be seen from 2^{-2j} factor, where j is scale dependent.

$\phi(x,y)$ is used to smooth.).

Regarding claim 3, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 wherein the input data comprises

image data (Title).

Regarding claim 4, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 wherein only wavelet coefficients

are scaled (Page 2790 Column 1, Line 1; $\psi(x,y)$ is the wavelet

coefficients scaled by 2^{-2j} factor.).

Regarding claim 5, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 wherein modifying coefficients

comprises multiplying each coefficient in one of the decomposition

levels by a first scale dependent parameter and multiplying each

coefficient in another of the decomposition levels by a second

scale dependent parameter (Page 2790 Equation 5; k_j and u_j are

scale dependent.).

Regarding claim 10, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 wherein the transform comprises a

critically sampled discrete wavelet transform (Page 2789 Equation

4; Disclosed is the wavelet transform for images that would be the

discrete wavelet transform.).

Regarding claim 13, all claimed limitations are set forth and rejected as per

discussion for claim 10.

Regarding claim 16, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 further comprising selecting the scale dependent parameter based on knowledge of the input data and knowledge of the image source (Page 2790 Column 1 Paragraph 3; Disclosed reference takes into account the luminance values of the images.).

Regarding claim 17, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 16 wherein the knowledge of the image source comprises a model point spread function of the image source (Page 2790 Column 1 Paragraph 3; Disclosed 'C' could be graphed to show the point spread.).

Regarding claim 18, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 16 wherein the knowledge of the data comprises an indication the data contains step edges (Page 2790 Column 1 Paragraph 3; Disclosed 'C' indicates the contrast, so the edge information.).

Regarding claim 19, Boccignone discloses all the claim limitations, as follows:

The method defined in claim 16 wherein selecting the scale dependent parameter is based on an estimate of decay of wavelet

coefficients across scales (Page 2790 Column 1 Equation 1; Scale

dependent parameter is based on the g_j across scales.).

Regarding claim 20, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 further comprising performing an

inverse transform on coefficients after scaling has been performed

(Page 2789 Equation 4; It would also be inherent to perform

inverse wavelet transform after performing needed modifications

through wavelet transform. Since the main purpose of wavelet

transform is to aid in analysis, but inverse transform must be

performed to return to the spatial domain.).

Regarding claim 27, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 wherein the different scale

dependent parameters are based on desired smoothness and

sharpness (Page 2790 Column 1 Paragraphs 1 and 3; $C(x,y,t)$ is the

sharpness function and $\phi(x,y)$ is the smoothing function, both can

be set to desirable levels.).

Regarding claim 28, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 further comprising renormalizing

coefficients (Page 2790 Equation 5; k_j performs the

normalization.).

Regarding claim 29, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 28 wherein renormalizing

coefficients comprises applying a scalar to coefficients in at least

one decomposition level (Page 2790 Equation 5; k_j is a scalar

coefficient.).

Regarding claim 30, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 28 wherein renormalizing

coefficients is performed as part of scaling coefficients by

multiplying all coefficients in one of the decomposition levels by a

scale dependent parameter chosen to achieve renormalization

(Page 2790 Equation 5; k_j performs the normalization and it is

dependent on scale j.).

Regarding claim 31, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 28 wherein renormalizing

coefficients is performed as part of scaling coefficients by

computing a range of wavelet coefficients before rescaling,

performing rescaling, and then scaling modified coefficients back

to the range before rescaling (Page 2790 Equation 5; k_j performs

the normalization and it is dependent on scale j, whose range is

known by the level or scales desired by the user.).

Regarding claim 32, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 wherein the scale dependent

parameters comprise monotonic functions (Page 2790; Page 2790

Column 1, Line 1; 2^{-2j} is a monotonic function.).

Regarding claim 33, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 2 further comprising classifying

wavelet coefficients into types (Page 2790 Column 1 Paragraph 3;

Classification is done between target and background.).

Regarding claim 34, Boccignone discloses all the claim limitations, as follows:

The method defined in Claim 33 wherein the types comprise text

and background (Page 2790 Column 1 Paragraph 3; Classification

is done between target (text) and background.).

Regarding claims 35-37 and 47-49, all claimed limitations are set forth and

rejected as per discussion for claims 2-5, 10, 13, 16-20, 27-34.

Regarding claims 50-52, all claimed limitations are set forth and rejected as per discussion for claims 2 and 33-34.

Regarding claims 53-55, all claimed limitations are set forth and rejected as per discussion for claims 2, 3 and 5.

Regarding claim 60, all claimed limitations are set forth and rejected as per discussion for claim 20.

Regarding claims 66-68, all claimed limitations are set forth and rejected as per discussion for claims 28-30.

Regarding claims 69-70, all claimed limitations are set forth and rejected as per discussion for claims 2 and 5.

Regarding claims 75-77, all claimed limitations are set forth and rejected as per discussion for claims 2, 3, 5 and 20.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[5]   Claims 8-9, 40-41, 58-59, 73-74, 80-81 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Boccignone in view of Shimizu [US 5,774,578].

Regarding claim 8, Boccignone discloses the claim limitations as set forth in the

discussion for claim 2.

Boccignone does not explicitly disclose the following claim

limitations:

The method defined in Claim 2 wherein modifying

coefficients results in smoothing of coefficients for scale

dependent parameters greater than a transition value and

results in sharpening of coefficients for scale dependent

parameters less than the transition value.

However, in the same field of endeavor Shimizu discloses the

deficient claim limitations, as follows:

Performing sharpening operation for parameter values

greater than a transition value and smoothing for parameter

values less than the transition value (Column 2 Lines 30-

33).

It would have been obvious to one with ordinary skill in the art at

the time of invention to modify the teachings of Boccignone with

Shimizu to further meet the claim limitations, as follows:

Boccignone discloses coefficients that are scale dependent

and used in sharpening (Title and discussion for claims 2-

5).

Shimizu discloses parameters that determine scaling and

smoothing (Column 2 Lines 30-33).

One could effortlessly combine both teachings in order to meet all

the claim limitations, since this would be an inherent modification

to perform smoothing with Boccignone's invention. It is well

known that multiresolution processing involves smoothing with

downsampling and sharpening with upsampling.

Regarding claim 9, Boccignone discloses the claim limitations as set forth in the

discussion for claim 8.

Boccignone does not explicitly disclose the following claim

limitations:

The method defined in Claim 8 wherein the transition value

is 1.

It would have been obvious to one with ordinary skill in the art at

the time of invention to set the transition value to 1, since

downsampling would be associated with resolution reduction (i.e.

modified number samples/original number samples < 1) and

upsampling would be associated with increased resolution (i.e.

modified number samples/original number samples > 1).

Regarding claims 40-41, 58-59, 73-74 and 80-81, all claimed limitations are set

forth and rejected as per discussion for claims 8-9.

[6]   Claims 11-13, 14, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Boccignone in view of Vetterli et al. ("Vetterli") [NPL document, refer to PTO-892].

Regarding claim 11, Boccignone discloses the claim limitations as set forth in the

discussion for claim 2.

Boccignone does not explicitly disclose the following claim

limitations:

The method defined in Claim 2 wherein the transform

comprises an overcomplete discrete wavelet transform.

However, in the same field of endeavor Vetterli discloses the

deficient claim limitations, as follows:

Vetterli discloses overcomplete discrete wavelet transform

(Page 171 Paragraph 4).

It would have been obvious to one with ordinary skill in the art at

the time of invention to modify the teachings of Boccignone with

Vetterli to further meet the claim limitations, as follows:

Vetterli discloses overcomplete discrete wavelet transform

to be used in order to obtain "superior quality than those in

critically sampled systems".

One could effortlessly combine both teachings in order to meet all

the claim limitations, since improved quality on Boccignone's

invention can be achieved through Vetterli's disclosure.

Regarding claim 12, Boccignone discloses the claim limitations as set forth in the

discussion for claim 2.

Boccignone does not explicitly disclose the following claim

limitations:

The method defined in Claim 2 wherein the transform

comprises a complex wavelet transform.

However, in the same field of endeavor Vetterli discloses the

deficient claim limitations, as follows:

Vetterli discloses complex wavelet transform (Page 183

Paragraph 2).

It would have been obvious to one with ordinary skill in the art at

the time of invention to modify the teachings of Boccignone with

Vetterli to further meet the claim limitations, as follows:

Vetterli discloses complex wavelet transform to be used in

order to provide multidimensionality.

One could effortlessly combine both teachings in order to meet all the claim limitations, since multidimensional enablement of Boccignone's invention can be achieved through Vetterli's disclosure.

Regarding claim 14, all claimed limitations are set forth and rejected as per discussion for claim 11.

Regarding claim 15, all claimed limitations are set forth and rejected as per discussion for claim 11.

[7]   Claims 21-26, 42-46, 61-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boccignone in view of Choi et al. ("Choi") [NPL document, refer to PTO-892].

Regarding claim 21, Boccignone discloses the claim limitations as set forth in the discussion for claim 2.

Boccignone does not explicitly disclose the following claim limitations:

The method defined in Claim 2 further comprising denoising after applying the wavelet transform.

However, in the same field of endeavor Choi discloses the deficient claim limitations, as follows:

The method defined in Claim 2 further comprising denoising after applying the wavelet transform (Page 596 Column 1 Paragraph 3 and Page 598 Column 2 Paragraph 1).

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Boccignone with Choi to further meet the claim limitations, as follows:

Choi discloses wavelet transform and scaling coefficients that are scale dependent used in denoising (Page 596 Column 1 Paragraph 3).

Boccignone discloses denoising, wavelet transform and scaling coefficients that are scale dependent used in image enhancement (Page 2790 Column 1 Paragraph 1).

One could effortlessly combine both teachings in order to meet all the claim limitations, since both Boccignone and Choi disclose denoising and Choi discloses a different method to arrive at Boccignone's results.

Regarding claim 22, Choi discloses all the claim limitations, as follows:

The method defined in Claim 21 further comprising performing denoising as part of scaling coefficients by multiplying all coefficients in one of the decomposition levels above a

predetermined threshold and setting other coefficients to a value

near zero (Page 598 Column 2 Paragraph 5; Figure 1 f; Cited

reference discloses thresholding method for denoising. Hard

thresholding would meet this feature.).

Regarding claim 23, Choi discloses all the claim limitations, as follows:

The method defined in Claim 22 wherein the value is zero (Page

598 Column 2 Paragraph 5; Figure 1 f; Hard thresholding would

have the value at zero.).

Regarding claims 24-25, all claimed limitations are set forth and rejected as per

discussion for claims 21-23.

Regarding claim 26, Choi discloses all the claim limitations, as follows:

The method defined in Claim 21 further comprises coloring noise

that remains after scaling coefficients (Figure 1 d; Cited reference

discloses remaining the noise.).

Regarding claims 42-46, all claimed limitations are set forth and rejected as per

discussion for claims 21-26.

Regarding claims 61-65, all claimed limitations are set forth and rejected as per

discussion for claims 21-25.

Regarding claims 82-83 and 86-87, it well known that the copiers have image

source and a classifier unit coupled to the image source, official notice.

All residual claimed limitations are set forth and rejected as per discussion for

claims 2, 5, 8, 9 and 20.

Allowable Subject Matter

[8]   Claims 6, 7, 38, 39, 56, 57, 71, 72, 78, 79, 84 and 85 are allowed.

Conclusion

[9]   THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing
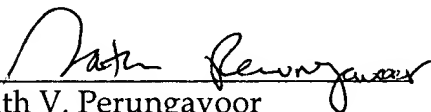
date of this final action.

Contact Information

[10]   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-

7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mr. Bhavesh M. Mehta whose telephone number is (571) 272-7453, can be reached

on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where

this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sath V. Perungavoor
Group Art Unit: 2625
Telephone: (571) 272-7455
Date: 1 July 2005

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600